

Noctua janthina ([DENIS & SCHIFFERMÜLLER])
sensu auctorum a complex of three species
(Lepidoptera : Noctuidae)

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Summary

It is shown that what hitherto has been understood under the name *Noctua janthina* ([DENIS & SCHIFFERMÜLLER] 1775) is in reality a complex of three species, of which *N. tertia* sp. n. is described.

Résumé

Les auteurs montrent que ce que l'on a considéré jusqu'à présent comme une espèce, appelée *Noctua janthina* ([DENIS & SCHIFFERMÜLLER] 1775), est en réalité un complexe de trois espèces, dont ils décrivent *N. tertia* sp. n.

Students of western and central European Noctuidae may have noticed the pronounced variation of the width of the marginal fascia of the hindwing upperside in what has hitherto been understood as *Noctua janthina* ([DENIS & SCHIFFERMÜLLER] 1775), characterized by a medium size within the genus, variegated patagia, forewings mostly covered by a violet suffusion and hindwings with a basal black shading. The ratio between the width of the marginal fascia and that of the hindwing along a line from the wing-base to the termination of vein Ax1 (first axalis) ranges from 0.17-0.34 in males and 0.17-0.30 in females, with a gap between 0.23 and 0.26 in the males. The values are unevenly distributed, being concentrated at the extremes. Thus it is possible to distinguish roughly between specimens with a narrow fascia and specimens with a wide fascia. In south-eastern Europe (Yugoslavia, Bulgaria, Greece) and in Turkey specimens are found with wide fasciae which differ in a single character from specimens with wide fasciae occurring in western and central Europe. We can thus speak of specimens of three types, namely with "narrow fascia", "wide fascia 1" and "wide fascia 2". Considering the whole geographical

distribution one finds the following differentiating characters in both sexes.

Morphology

- A1. Narrow fascia : costal termination of fascia abrupt, with inner edge of fascia perpendicular or nearly so to costa ; cavity in middle of fascia asymmetrical, with anterior edge tending to be straight (Fig. 1).
- A2. Wide fascia 1 : costal termination of fascia in the shape of a wedge directed towards wing-base without reaching it, terminating in a more or less sharp point at black shading radiating from wing-base ; cavity in middle of fascia symmetrical, with a continuously rounded edge (Fig., 2).
- A3. Wide fascia 2 : costal termination of fascia directed towards wing-base, terminating diffusely at black shading radiating from wing-base or before ; cavity in middle of fascia symmetrical (Fig. 3).



Figs. 1-3. Hindwing upperside in *Noctua janthina* sensu auct. 1. "Narrow fascia" (*N. janthina* [D. & S.]). 2. "Wide fascia 1" (*N. janthe* (ВКН.)). 3. "Wide fascia 2" (*N. tertia* sp. n.). $\times 1.5$.

No intermediates have been found in these characters, which permits a grouping from regions in which the width of the fascia appears to vary continuously. The following correlated characters were found :

- B1. Narrow fascia : forewing upperside : ground-colour variable, from pale ochreous or greyish to brown, sometimes with reddish tinge, often obscured by a violet suffusion ; subterminal line ending before costa against a well defined reddish patch ; orbicular and reniform stigmata hardly discernible ; forewing underside : black area emanating from wing-base ending along subterminal line (feebly indicated on costa) with short projections between veins or, rarely, irregularly diffuse at end when shorter ; hindwing upperside : fringes yellow throughout.

- B2. Wide fascia 1 : forewing upperside : brown, covered by a violet suffusion or sometimes, in the south-eastern area of distribution, brilliant salmon-red, especially in the female ; subterminal line ending before costa against a well defined reddish patch ; orbicular and reniform stigmata indicated by a white outline ; forewing underside : black area emanating from wing-base extending beyond subterminal line or, rarely, ending along it with cavities between veins ; hindwing upperside : fringes yellow but brown at apex in the male.
- B3. Wide fascia 2 : sexually dimorphic in colour of forewing upperside : ground-colour dark ash-grey to sooty brown in the male, pale reddish brown in the female, without violet suffusion ; subterminal line widening proximally on costa, gradually reddish ; orbicular and reniform stigmata mostly inconspicuous but sometimes indicated by a yellowish outline ; forewing underside : black area emanating from wing-base extending beyond subterminal line ; hindwing upperside : fringes yellow but brown at apex in male.

In the male genitalia differences have been found only in the vesica. All other structures are apparently identical. The everted vesica is asymmetrical, subtriangular when viewed dorso-ventrally (best seen in Fig. 15). At the angle pointing upwards, or left, in the figures, it possesses a cornutus-like sclerotization and on the ventral surface (towards the observer of the figures) a diverticulum. The following differences are correlated with the wing characters :

- C1. Narrow fascia : angular sclerotization with apex blunt ; diverticulum inserted on the whole anterior part of ventral side of vesica, directed about 45° to the right (downwards in the figure) ; anterior side of diverticulum convex (Fig. 12).
- C2. Wide fascia 1 : angular sclerotization with apex blunt ; diverticulum inserted on the whole anterior part of ventral side of vesica, directed about 45° to the right (as in narrow fascia) ; anterior side of diverticulum straight when viewed dorsoventrally (Fig. 13).
- C3. Wide fascia 2 : angular sclerotization sometimes with apex blunt but often cylindrical or finger-like ; diverticulum inserted on the left part of ventral side of vesica, directed ventrally (towards the observer), becoming compressed when preparing the structure between slide and coverslip (Fig. 14), if not forced downwards first (Fig. 15), showing a circular insertion.

The female genitalia have a cylindrical ductus bursae ; the bursa is bent towards the right posteriorly, leading into a sac-like structure directed orally ; the ductus seminalis is connected to a bulb at the

left posteriorly. The bursa is collapsed in unmated specimens, the membrane with a regular pattern of longitudinal folds whereas it is expanded with suppression of the folds in mated specimens ; seventh abdominal segment strongly sclerotized but without differentiating characters. The following differences are correlated with the wing characters :

- D1. Narrow fascia : anterior part of bursa long, slender ; bulb narrow, directed towards the left (Fig. 16).
- D2. Wide fascia 1 : anterior part of bursa relatively short and wide ; bulb of varying width, directed more or less clearly in oral direction (Fig. 17).
- D3. Wide fascia 2 : anterior part of bursa relatively short and wide ; bulb broad, directed towards the left (Fig. 18).

It is advantageous for the comparison of the bursa and especially of the bulb in unmated specimens to blow up the bursa first with water and then with alcohol with the help of a syringe through the ductus bursae, touching the bulb on the outside for a correct expansion. If the pressure is sufficiently high it is possible to obtain a permanent expansion nearly as good as in mated specimens. It can be difficult to judge the shape and the direction of the bulb in mated specimens when deformed by an intruding spermatophore. No differences have been found in other parts or in the size.

It is evident from these differences and correlations that there are three species. It was necessary to discuss the morphology first, in order to clarify the complex nomenclatural situation. Several available names have been erected in the complex. They will be discussed in chronological order.

Nomenclature

Phalaena (Noctua) janthina [DENIS & SCHIFFERMÜLLER] 1775, Ankündigung eines systematischen Werkes von den Schmetterlingen der Wienergegend : 78, “Unbek[annte] R[aupe]. Veilblaulichte braunfleckigte E[ule]”. Type locality : [Austria :] “Wienergegend” by implication. Type material destroyed (HORN & KAHLE 1935-37 : 243).

“Veilblaulichte braunfleckigte Eule” (blue-violet brown-spotted-noctuid moth), formally the German name of the species, is a rather deceptive and brief description which could apply to either of the two species “narrow fascia” and “wide fascia 1”. As the type locality is situated within the distribution area of both species, it cannot be decided for which species the name should be used, even if most older subsequent authors have figured the species “wide fascia 1” as *Noctua janthina*.

Phalaena (Noctua) domiduca HUFNAGEL sensu FUESSLY 1781, Archiv der Insectengeschichte : 1, pl. 16, figs. 1-5. Invalid misidentification and junior primary homonym of *Phalaena domiduca* HUFNAGEL 1766, Berlinisches Magazin 3 : 404 (= *Noctua fimbriata* (SCHREBER)).

The description and the figures correspond to the species “wide fascia 1”.

Phalaena flavomaculata GOEZE 1781 (erected as *flavo-maculata*), Entomologische Beyträge 3 (3) : 274, “La Phalène brune à tache jaune aux ailes inférieures”, with reference to GEOFFROY 1762, Histoire abrégée des Insectes que se trouvent aux Environs de Paris 2 : 148, without Latin name. Type locality : [France :] “Paris” (GEOFFROY 1762). Type material unknown.

The description in GOEZE, which is an abbreviation of the one in GEOFFROY, corresponds best to our species “wide fascia 1” in the extreme form, in which the yellow area on the hindwing is reduced to a round patch. *Phalaena janthina* not cited in the work.

Phalaena altica GEOFFROY 1785 in FOURCROY, Entomologia parisiensis : 290, “La Phalène brune à tache jaune aux ailes inférieures”. Type locality : France : Paris, by implication. Type material not found.

The French diagnosis has seemingly been copied from GOEZE 1781 for *Phalaena flavomaculata*. *Phalaena altica* corresponds thus also to the species “wide fascia 1”. *Phalaena janthina* not cited in the work.

Phalaena fimbriaminor DE VILLERS 1789 (erected as *fimbria-minor*), Caroli Linnaei Entomologia 2 : 278, pl. 5, fig. 24, “spirilinguis, laevis, alis incumbentibus, purpureo tinctis, in medio grisea”. Type locality : [SE France :] “Occitania”. Type material not found.

The description “alis ... purpureo tinctis, in medio grisea” (purplish wings, grey in the middle) and the narrow fascia in the figure suggest our species “narrow fascia”, whereas the costal termination and the symmetric cavity of the fascia agree with our species “wide fascia 1”. No such specimens or type material have been found. According to HORN & KAHLE (1935-37 : 289) the collection of DE VILLERS should be at Lyon, where it has not been found. Specimens from S France (1 ♂, 4 ♀♀) in the National Museum of Natural History at Paris at our disposal correspond clearly to our “narrow fascia”. The figure in DE VILLERS cannot be identified. It is possibly a combination of two or more specimens in various condition. Further on, *ibid.* 4 : 463, DE VILLERS described also *Phalaena janthina* [DENIS & SCHIFFERMÜLLER]. The description suggests the extreme form *Phalaena flavomaculata* GOEZE of the species “wide fascia 1”.

Phalaena janthe BORKHAUSEN 1792, Systematische Beschreibung der europäischen Schmetterlinge 4 : 111. Type locality : [S Germany :] “Darmstadt”. Type material unknown.

Borkhausen described first *Phalaena janthina* (ibid. 4 : 109) and then his new *Phalaena (Noctua) janthe*, founding partly the description upon the larva. It is clear from the descriptions that both species belong to the complex treated here, especially in the variegated patagia (as "Halskragen").

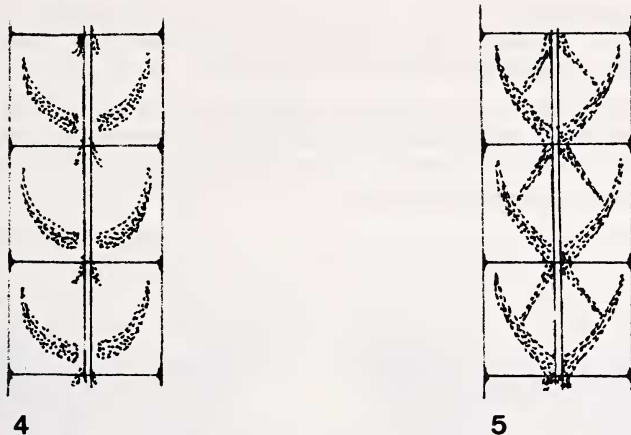
Besides the description of various irrelevant characters one finds the following differentiating details in the imagines : the forewing violet ("veilblau") in *P. janthina*, pale brown in *P. janthe* ; the orbicular and reniform stigmata ("die Naben") outlined in white in *P. janthina*, hardly discernible in *P. janthe* ; the fascia on the hindwing wide in *P. janthina*, touching at both ends the basal shading ; the width of the fascia and its relation to the basal shading not commented for *P. janthe* (the characters stated for *P. janthina* can thus be supposed to be absent in *P. janthe*).

It is clear from this comparison that BORKHAUSEN had recognized two species, of which *P. janthina* corresponds to our species "wide fascia I" and *P. janthe* to our species "narrow fascia" and that he must be considered to be the first revisor to have established the identity of *Phalaena janthina* [DENIS & SCHIFFERMÜLLER] and to have described a new species.

At the end of his book (ibid. "Nacherinnerungen" : 809) BORKHAUSEN rejected the specificity of *P. janthe* having reared again specimens from "the same kind of larva" but obtaining *P. janthina*. This induced us to study the larvae. The species "narrow fascia" has been reared by O. Hammarstedt at the University of Lund, Dept. of Zoology, from a Swedish population (Scania : Stensoffa) and the species "wide fascia I" by J. Adolfsson, Spånga (Stockholm) from eggs obtained from a specimen taken in northern Greece (Macedonia : Dysoron above Rhodopolis 27.IX.1986, leg. and in coll. A. Moberg, identification confirmed by genital dissection). The selection of localities is due to practical circumstances only. The larvae of both species are variable in colour and pattern. In the last instar the colour varies from grey to brown and the pattern is composed of several independent elements, as black patches on the abdominal legs, present or absent, lateral lines more or less evident, formed by isolated or connected streaks, scattered dark dots of varying number but more evident in the species "narrow fascia". The real specific difference was found in the dorsal pattern. In the species "wide fascia I" this pattern is formed on each segment by two diffuse, greyish brown, curved streaks diverging near the caudal segmental division from a central dorsal line, forming together a U-shaped element open anteriorly (Fig. 4). In the species "narrow fascia" the dorsal pattern of each segment is formed by four similar but straight streaks, two of them diverging from the caudal and two from the oral segmental division, forming two V-shaped elements with the openings directed against each other (Fig. 5). These two elements vary independently, the anterior one often being weakly developed or vestigial. In the latter case the dorsal patterns of the two species are very similar, the only difference being a U-shaped element in the species "wide fascia I" (i.e. in *N. janthina*) and a V-shaped element in the species "narrow fascia" (i.e. in *N. janthe*). BORKHAUSEN had probably found too few larvae or did not have the two kinds at the

same time to be aware of the differences. We consider the name *Phalaena janthe* BORKHAUSEN to be perfectly valid for the species "narrow fascia". The species "wide fascia 2" has not been reared due to practical circumstances.

After the rejection of *N. janthe* by BORKHAUSEN himself the name has been ignored by all subsequent authors.



Figs. 4-5. Larvae in *Noctua*, last instar, central segments in dorsal view. 4. *N. janthina* (D. & S.), drawn from colour slides, photo J. Adolfsson. 5. *N. janthe* (BKH.), drawn from colour slides, photo O. Hammarstedt. $\times 3$, head upwards.

Agrotis janthina latemarginata (var.) RÖBER 1900, Ent. Nachr. 26 : 204. Type locality : [Germany :] "Harz". Type material unknown.

This name has been interpreted by some authors to denote the extreme form of *N. janthina* in which the yellow area on the hindwing is reduced to a round patch, as for example by CAPUŞE (1963 : 191, fig. 4). This interpretation is wrong as RÖBER compared his variety with the figure in HOFMANN (1894 : pl. 32, fig. 7), which represents *N. janthe*, saying that the fascia in his variety is larger and that it reaches the basal shading at both ends so as to reduce the ground colour to a yellow patch "in most specimens", thus including normal specimens of *N. janthina*.

Triphaena janthina algerica (var.) OBERTHÜR 1918, Études de Lépidoptérologie comparée 16 : 102, pl. 493, fig. 4087. Type locality : "Alger". Type material in Natural History Museum Basel.

MATERIAL STUDIED : 1 ♀, "Alger Holl. 1901" [Holl is the collector], "Alger 20/7 01", "*Triphaena janthina* var. *algerica* Obthr.", "Type *algerica* Obth. 4087" (red label), "Sammlung Dr. A. Corti" ; genitalia preparation Corti-No. XVIII Nc XVa 90, mounted by E. v. Mentzer. — 1 ♀, "Algérie Lambèse September 1913 H. Powell", "Alger". — Specimens and preparation in coll. Natural History Museum Basel.

The description is based on the pale forewing, the narrow fascia and the pale yellow colour of the hindwing, differing in these characters from "European *Triphaena janthina*". We have found no differences from European *N. janthina* in the two types studied, neither in the habitus nor in the genitalia. The width of the fascia corresponds to the minimum in *N. janthina*.

Triphaena janthina intermedia (ssp.) ROTHSCHILD 1920, Nov. zool. 27: 35.
Type locality: [Algérie: Prov. Oran:] "Sidi-bel-Abbès" and "Ain Draham".
Type material in coll. British Museum (Nat. Hist.).

MATERIAL STUDIED: 1 ♂, "Sidi-bel-Abbès, Prov. Oran, 8 Aug. 1918 (M. Rotrou)", "Rothschild Bequest B. M. 1939-1". — 1 ♂, "Sidi-bel-Abbès, prov. Oran, 20.viii 1917 (M. Rotrou)", "Rothschild Bequest B. M. 1931-1". — In coll. British Museum (Nat. Hist.).

The description is based on the fascia on the hindwing being larger than in *Triphaena janthina algerica* OBERTHÜR but narrower than in "*j. janthina*". The two specimens studied but not dissected, which should belong to the type series even if not labelled as such, correspond perfectly to *N. janthina* with the width of the fascia at maximum. The taxon is worth a closer study when more localities are known.

As no name has been found for the third species "wide fascia 2" it will be described here as new.

The results of the comparative morphological study and the nomenclatural discussion are summarized in the following shortened and chiefly diagnostic redescription of *Noctua janthina* ([DENIS & SCHIFFERMÜLLER]) and *Noctua janthina* (BORKHAUSEN) and the description of *Noctua tertia* sp. n.

Considerations on the geographical distribution and variation are added. As publications in which localities are cited are very few, information from older works is also utilized. Material and reliable records from the greater part of the known distribution of the complex are missing.

Hundreds of specimens of *N. janthina* and *N. janthina* have been available for study, therefore only material from localities of special interest, such as geographic extremes, are cited. Collectors are cited only for material not in our possession.

Noctua janthina ([DEN. & SCHIFF.])

Figs. 2, 4, 8-9, 13, 17

Phalaena (Noctua) janthina [DEN. & SCHIFF.] 1775.

Phalaena (Noctua) domiduca HFN. sensu FUESSLY 1781.

Phalaena flavomaculata Gz. 1781.

Phalaena altica GEOFFR. 1785.

Agrotis janthina latemarginata RÖBER 1900.

TYPE LOCALITY : Vienna district.

DESCRIPTION ♂ ♀ (Figs. 2, 8-9) : Forewing upperside : brown, covered by a violet suffusion, or sometimes brilliant salmon-red in the south-eastern area of distribution ; subterminal line ending before costa against a reddish patch ; orbicular and reniform stigmata indicated by a white outline ; forewing underside : black area emanating from base of wing extending mostly beyond subterminal line ; hindwing upperside : ground-colour and fringes yellow, but fringes brown at apex in ♂ ; costal termination of marginal fascia directed towards wing-base ; cavity on fascia symmetrical.



Figs. 6-11. *Noctua* spp. 6. *N. janthe* (ВКН.) ♂, France : Corsica : Piedicroce 22.VII.1967. 7. *N. janthe* (ВКН.) ♀, France : Pyrénées-Orientales : Vernet-les-Bains 7.VIII.1961. 8. *N. janthina* ([D. & S.]) ♂, Yugoslavia : Macedonia : Ohrid 5.VIII.1973. 9. *N. janthina* ([D. & S.]) ♀, France : Corsica : Asco 1.VII.1967. 10. *N. tertia* sp. n. ♂ paratype, Greece : Macedonia : Phalakron Oros 20.VII.1987, leg. M. Fibiger. 11. *N. tertia* sp. n. ♀ holotype, Bulgaria : Kožuch 17.IX.1983. Life size. Leg. and in coll. E. v. Mentzer except fig. 10.

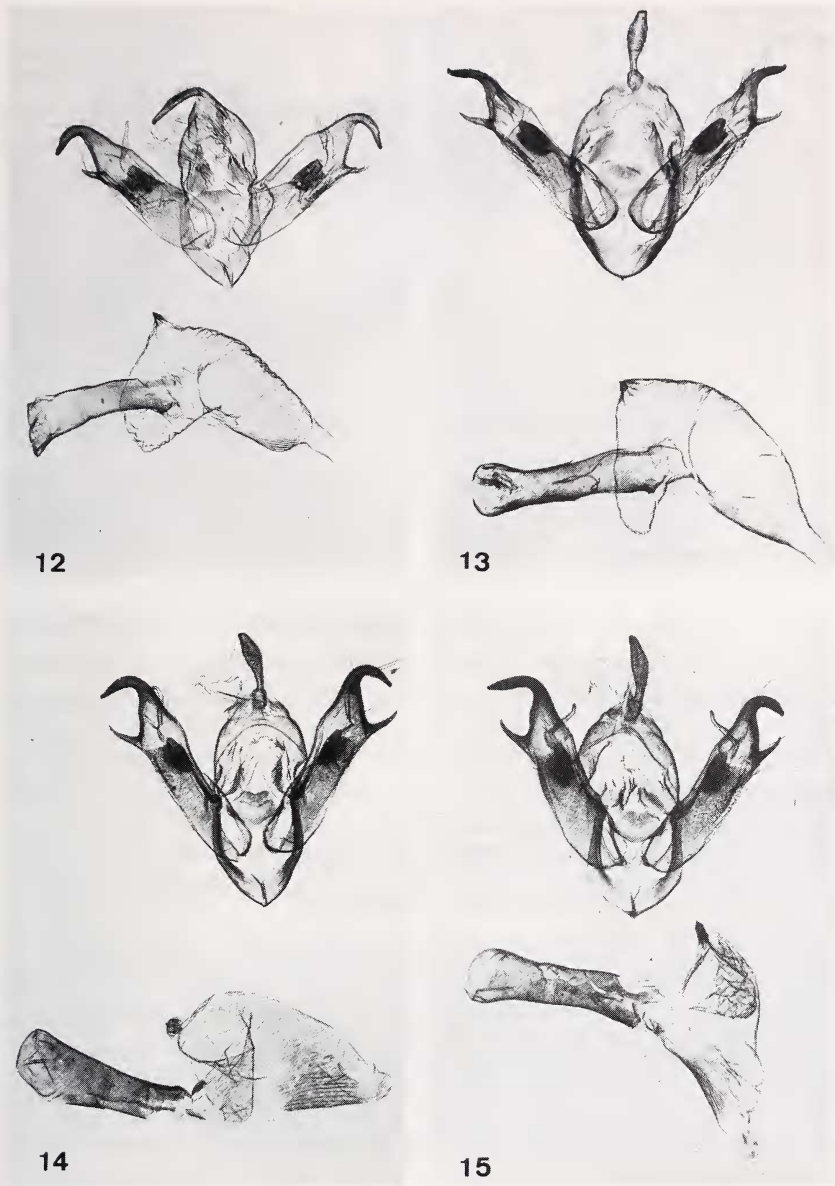
MALE GENITALIA (Fig. 13) : Diverticulum on vesica straight.

FEMALE GENITALIA (Fig. 17) : Anterior part of bursa relatively short and wide ; insertion bulb of ductus seminalis directed orally.

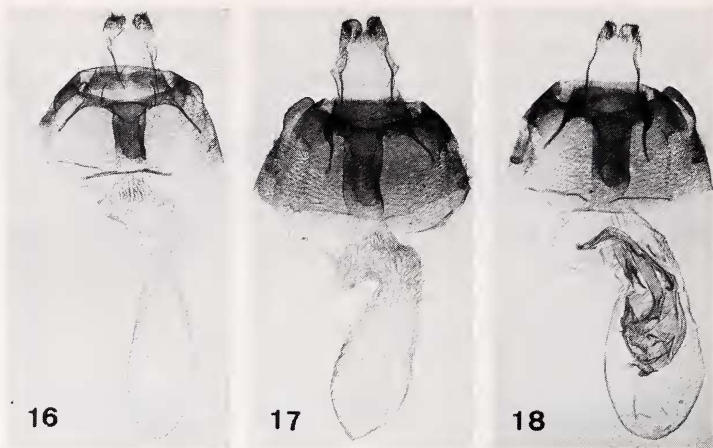
GEOGRAPHICAL DISTRIBUTION : From SW Europe material available from Spain : Aragón : Albarraçín and documented occurrence in Spain : Old Castile : Sotos del Burgos (CALLE 1982 : pl. 7, fig. 81m). For France material available from Pyrénées-Orientales : Vernet-les-Bains, from Drôme : St. Restitut, from Corsica : several localities, and occurrence documented from Paris as *Phalaena flavomaculata* GOEZE cited above. For Italy material available from Marche : Monte Sibilla, from Tuscany : Albiano and from Piedmont : Meana. For Switzerland material available from several localities (in coll. DE BROS, Basel). For Austria no material or documentation available. For Germany occurrence documented from Harz as *Agrotis janthina latemarginata* RÖBER cited above and from Westfalen (ROBENZ, SCHAEFFER & WEIGT 1982 : figs. 1-2). Southern distribution limit on the Iberian Peninsula and the northern limit in France, Belgium, the Netherlands and Germany unknown. Sporadic findings on the SE Danish Isles and on Bornholm and scattered findings in Sweden (Scania : Sandhammaren, Löderup, Klagshamn ; Öland : Gårdby ; Gotland : Västergarn, several collectors) indications for occasional immigrants from the south. No material or documentation found for the British Isles.

For eastern Europe material available from Yugoslavia : Croatia : Makarska Riviera, Makedonia : Katlanovo (in coll. H. HACKER, Staffelstein) and Makedonia : Skopje, Ohrid, Novi Dojran. For continental Greece practically unlimited material available from the whole country from sea level up to 1800 m. No material or documentation available for the Aegean Isles. Distribution known throughout whole of Hungary (L. RONKAY, Budapest, in litt., material selected by A. MOBERG). For Bulgaria material available from several localities (in coll. J. GANEV, Sofia). For Romania recorded by CAPUȘE (1963 : 191, fig. 4) as *Agrotis janthina latemarginata* RÖBER discussed above. For Czechoslovakia, Poland and European USSR no material available nor reliable records found. For Turkey material available from several localities scattered over the country from Çanak-Kale in the west to Hakkari in the east (in coll. H. Hacker).

VARIATION : Forewings covered by a violet suffusion over the whole distribution area except for occasional specimens from Greece and Turkey. Marginal fascia on hindwings shows a slight tendency to widen with increasing latitude, with the more occasional extreme form *flavomaculata* in the north.



Figs. 12-15. Male genitalia in *Noctua*. 12. *N. janthe* (Вкн.), gen. prep. E. v. M. No. 10.097 of specimen fig. 6. 13. *N. janthina* ([D. & S.]), gen. prep. E. v. M. No. 10.092 of specimen fig. 8. 14. *N. tertia* sp. n. paratype, Turkey : Taurus : Mersin 11.VII.1987, gen. prep. No. 1414, leg. and in coll. M. Fibiger. 15. *N. tertia* sp. n. paratype, gen. prep. No. 12.088 of specimen fig. 10. $\times 10$, aedeagi in ventral view.



Figs. 16-18. Female genitalia in *Noctua*. 16. *N. janthe* (BKH.), gen. prep. E. v. M. No. 11.068 of specimen fig. 7. 17. *N. janthina* ([D. & S.]), gen. prep. E. v. M., No. 11.073 of specimen fig. 9. 18. *N. tertia* sp. n., gen. prep. E. v. M. No. 11.075 of specimen fig. 11. $\times 5$, ventral view.

***Noctua janthe* (BKH.)**

Figs. 1, 5, 6-7, 12, 16

Phalaena janthe BKH. 1792.

Triphaena janthina algerica OBTH. 1918.

Triphaena janthina intermedia ROTHSCH. 1920.

TYPE LOCALITY : South Germany : Darmstadt.

DESCRIPTION ♂ ♀ (Figs. 6-7) : Forewing upperside : pale ochreous or greyish to brown, sometimes reddish, often obscured by a violet suffusion ; subterminal line ending before costa against a reddish patch ; orbicular and reniform stigmata hardly discernible ; forewing underside : black area emanating from wing-base ending at subterminal line ; hindwing upperside : ground colour and fringes yellow throughout ; inner edge of marginal fascia ending perpendicularly to costa ; cavity on fascia asymmetric.

MALE GENITALIA (Fig. 12) : Diverticulum on vesica convex anteriorly.

FEMALE GENITALIA (Fig. 16) : Anterior part of bursa relatively long and slender ; insertion bulb of ductus seminalis narrow, directed towards the left.

GEOGRAPHICAL DISTRIBUTION : Material available from the localities in Algeria cited above for *Triphaena janthina algerica* and *T. janthina intermedia*. For Spain no material available, only one reported occurrence in Old Castile : Segovia (CALLE 1989 : pl. 7, fig. 81h). For France material available from Pyrénées-Orientales : Vernet-les-Bains (sympatric with *N. janthina*), from Drôme : Nyons and from Corsica : several localities (sympatric with *N. janthina*) and from several other localities in S France in the Paris Museum. The species is probably distributed throughout France and on the British Isles (for example SKINNER 1984 : "Widely distributed and often common throughout the British Isles" as *N. janthina*). For Italy material available from Marche : Monte Sibilla, from Tuscany : Albiano (sympatric with *N. janthina*). Further north material available from Piedmont : Meana. No material available or records found for Switzerland and Austria. For Germany occurrence reported from Westfalen (ROBENZ, SCHAEFER & WEIGT 1982 : figs. 3-6 as *N. janthina*). Abundant material available from Denmark and from several provinces of S Sweden (Scania, Halland, Vestrogotia, Smolandia, Blekinge, Öland and Gotland (several collectors). Probably distributed throughout the Iberian Peninsula, but southern limit in Italy unknown.

For eastern Europe distribution known throughout the whole of Hungary (L. RONKAY in litt., material selected by A. MOBERG, mostly sympatric with *N. janthina*). For the Balkan Peninsula no material available nor documentation found except for a single specimen from Greece : Pindos : Agia Paraskevi seen in a collection but requiring confirmation. For Romania, Czechoslovakia, Poland and European USSR no material available nor reliable documentation found. Distribution probably limited to NW Africa and western and central Europe.

VARIATION : Violet suffusion on forewings often feeble or absent as individual variation, as in the south, for example in Algeria and in Piedmont : Meana, and on the British Isles. Marginal fascia on hindwings with a tendency to widen with increasing latitude, a geographic variation more pronounced than in *N. janthina* apart from the rare extreme form *flavomaculata* of *N. janthina* in the north.

Noctua tertia sp. n.

Figs. 10-11, 14-15, 18.

TYPE LOCALITY : SW Bulgaria : Kožuch (near Petrič).

ETYMOLOGY : *tertia* = the third (species of the complex).

Type material

HOLOTYPE: ♀, SW Bulgaria: Kožuch 17.IX.1983 (Fig. 11), genitalia preparation No. 11.075 (Fig. 18), leg. and in coll. E. v. Mentzer.

PARATYPES: 1 ♂, Greece: Macedonia: Phalakron Oros 20.VII.1987 (Fig. 10), leg. M. FIBIGER, gen. prep. E. v. MENTZER No. 12.088 (Fig. 15), in coll. E. v. MENTZER. — 1 ♂, Greece: Macedonia: Pindos: Agia Paraskevi 16.VII.1985, leg. M.-P. SCHREIER, gen. prep. E. v. MENTZER No. 12.071, in coll. E. v. MENTZER. — 1 ♂, Greece: Phokis: Itea 2.IX.1985, gen. prep. No. 4862, leg. and in coll. H. HACKER. — 1 ♂, Greece: Phokis: Itea 2.IX.1985, leg. H. HACKER, in coll. A. MOBERG. — 1 ♂, Turkey: Taurus: Mersin 11.VII.1987, gen. prep. No. 1414 (Fig. 14), leg. and in coll. M. FIBIGER. — 2 ♀♀, Greece: Thessalia: Stomion 10.IX.1983, gen. prep. No. H 12, leg. and in coll. A. MOBERG. — 1 ♀, Greece: Thessalia: Stomion 10.IX.1983, gen. prep. No. 331, leg. and in coll. M. FIBIGER. — 1 ♀, Greece: Ilis: Saharo 12.X.1984, gen. prep. No. 11.069, leg. and in coll. E. v. MENTZER. — 1 ♀, Greece: Phtiotis: Thermopyle 26-27.IX.1984, leg. and in coll. A. MOBERG. — 3 ♀♀, Turkey: Gaziantep 10.VII.1987, gen. prep. No. 1415, leg. and in coll. M. FIBIGER. — 1 ♀, Turkey: Province Afion: Degirmenköy 30.VIII.1983, leg. H. HACKER, gen. prep. E. v. MENTZER No. 12.089, in coll. E. v. MENTZER. — 1 ♀, Turkey: Province Konya: Sultandaglari 31.VIII.1983, leg. W. WOLF, gen. prep. H. HACKER No. 4863, in coll. H. HACKER.

DESCRIPTION, ♂ and ♀ (Figs. 10-11): Wingspan: ♂ 36.0-39.8 (\bar{x} = 37.2 mm, n = 5), ♀ 40.0-46.6 mm, holotype 41.8 mm (\bar{x} = 42.6 mm, n = 11). Most similar to *N. janthina* ([DEN & SCHIFF.]). Forewing upperside: ash-grey to sooty brown in ♂, pale reddish brown in ♀, without violet suffusion; antemedian and postmedian lines as in *N. janthina*; subterminal line widening proximally on costa, gradually reddish, not forming well defined costal patch as in *N. janthina*; orbicular and reniform stigmata mostly inconspicuous but sometimes indicated by yellowish outline. Forewing underside: black area emanating from wing-base extending beyond subterminal line. Hindwing upperside: ground-colour and fringes deep yellow, but fringes brown at apex in ♂; marginal black fascia wide, its medial cavity symmetrically rounded as in *N. janthina*, its costal termination in shape of wedge directed towards wing-base, terminating diffusely at black shading radiating from wing-base or before. Hindwing underside without differentiating characters.

MALE GENITALIA (Figs. 14-15): Clasping structure as in *N. janthina*. Vesica triangular in dorso-ventral view when everted, with sclerotization on anterior angle sometimes with blunt apex but often cylindrical or finger-like. Diverticulum inserted on left part of ventral side of vesica, directed ventrally (towards the observer, Fig. 15) or can be forced down (Fig. 14), showing a circular insertion.

FEMALE GENITALIA (Fig. 18) : Ductus bursae straight ; posterior part of bursa bent towards the right, followed by sac-like anterior part directed orally ; ductus seminalis inserted on bulb on left side of posterior part of bursa, bulb twice as wide as this part of bursa ; apophyses and strongly sclerotized abdominal segment 7 as in *N. janthina*.

It may sometimes be difficult without genital dissection to distinguish specimens of *N. tertia*, especially males, from specimens of *N. janthina* with feeble violet suffusion. A useful character is the widening of the subterminal line on the costa of forewing in *N. tertia*, which is substituted in *N. janthina* by a well defined patch.

GEOGRAPHICAL DISTRIBUTION : Distributed from S Yugoslavia and S Bulgaria throughout continental Greece and Turkey as documented under material above. Sympatry with *N. janthina* demonstrated only by a few specimens from Yugoslavia : Macedonia : Skopje, Greece : Macedonia : Mount Phalacron, Greece : Thrakia : Kavisos and Turkey : Gaziantep. Seemingly the two species substitute each other locally. *N. tertia* occurs from sea level up to 1800 m, as *N. janthina*.

VARIATION : Width of marginal fascia on hindwings practically constant, probably due to the limited geographical distribution.

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